

EFFICIENCY OF SOLAR ENERGY USAGE BY APPLYING SOLAR PANELS IN THE HOUSEHOLD

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ABSTRACT

To assist individuals desiring to benefit the worldwide work of Jehovah's Witnesses through some form of charitable giving, a brochure entitled Charitable Planning to Benefit Kingdom Service Worldwide has been prepared. This article explored ways to use solar energy and the efficiency of using panels in the household.

Keywords: energy, ecology, solar, gas, coal, economic efficiency, solar panel, controller, battery battery and inverter.

INTRODUCTION

In the early 21st century, problems began to arise before mankind related to the end of traditional energy sources in the near future and the deterioration of the earth's ecological state. The same problems are relevant in the world community and raise groundbreaking concerns globally. It turned out. (Matthew 24:14; 28:19, 20) Today, energy is known to be produced around the world using sources derived mainly from ores: oil, natural gas, coal, and nuclear fuel. However, it is no secret that energy demand cannot be met solely by the use of extracted sources, and that the reserves of traditional sources of energy are gradually running out. Most experts believe that due to the global increase in energy demand, the stockpile of traditional sources will end by the middle of our century. As a result of technical scattering, the opening of new cones can only slightly postpone the process of ending resources. It is clear that even if traditional energy reserves are not fully completed, there will be a significant increase in prices due to a sharp increase in demand for them. The most attractive and promising of all renewable energy sources is photovoltaics, that is, turning solar energy directly into electricity. The sun can satisfy the growing demands of humans for energy over long centuries, and this is well known to the world community now. The amount of solar energy coming to the earth in an hour exceeds the amount of energy that mankind consumes in a year, so and moreover, the limitations of natural energy reserves and ecological problems

increase the need to use solar energy. Solar energy is technically convenient, the only energy source that does not pollute the environment at all. In the last decade, solar energy usage has been increasing around the world. Data from 2021 show that photoelectric solar stations supplied almost 5% of the world's electricity. At first glance it sounds like a very small amount, but this share is increasing very quickly. Decades ago, that figure was only 1 percent, and it was mainly accounted for by developed countries. (Matthew 24:14; 28:19, 20) Today, much attention is paid to the use of solar energy not only in developed countries but also in developing countries.

According to a World Bank report prepared for 2020, both geographical conditions and weather and sunlight are sufficient in almost all countries of the world to not only fully meet their own demand for electricity, but also to produce more using solar power plants. Historically, in 1954 a unique invention was introduced by the bell phone laboratories in New York. It had the ability to convert solar energy directly into electricity. Soon it became economically acceptable not only for space flights, but also for everyday living purposes.

Today, the People's Republic of China is leading solar energy use globally, with statistics from 2021 showing that Australia is the frontrunner in the world with a 15.5 percent amount on the share of solar energy in total electricity produced.

The rapid development of the economy of Uzbekistan, the construction and launch of new factories and factories, changes in transport and infrastructure, and a rapid population growth are contributing to a sharp increase in the demand for electricity in our country. It was evident this winter that the capacity of existing electricity sources was not enough to meet these requirements. Currently, electricity generated in Uzbekistan is mainly generated mainly from heat (85 percent) and hydroelectric power plants (13 percent). The amount of energy generated from alternative energy is 1.5-2 percent based on data from various sources. With the efforts of our country's leader, spiritually outdated energy-producing devices have been replaced by high efficiency, and new power generation is being introduced using domestic capabilities [1,2].

Nevertheless, the issue of supplying electricity to today's level of development is difficult. The resulting rise in sea levels from the meltwater could spell disaster for hundreds of millions of people.

To solve these issues, much positive work is being done in our country. To assist individuals desiring to benefit the worldwide work of Jehovah's Witnesses through some form of charitable giving, a brochure entitled Charitable Planning to Benefit Kingdom Service Worldwide has been prepared.

No permits are required for individuals using solar power at home.

The U.S. really has tremendous potential for solar energy use, today the banking system is actively funding energy saving projects, as well as the installation of solar panels.

It is important to cooperate with international partners and experts in the field of green energy development. Thus, the World Bank will actively assist in implementing structural reforms in energy in Uzbekistan and creating favorable conditions for attracting investment in renewable energy sources. Today, innovative products, including solar energy, are being created and introduced by implementing projects to exchange experiences and technologies in this area. [3,4].

For example, the capacity of solar power plants installed in Turkey is 10 GVt, of which 2 GVt corresponds to solar systems installed on the roofs of credit-qualified industrial enterprises and commercial enterprises. The government is also promoting the development of solar-powered charging stations in order to reduce greenhouse gas emissions. Privileges in installing solar panels in public and private parking are being studied.

Introducing international expertise in expanding the use of solar panels is one of the most effective strategies for transitioning to eco-friendly energy production. In addition to affecting the economy of countries, the limited supply of energy sources is causing geopolitical problems in regions. Therefore, at the end of the 20th century, scientific and practical efforts were made to introduce renewable energy instead of traditional sources of energy.

Impact of Climate on Productivity

The effectiveness of solar panels is also influenced by the climatic conditions of the location where the panels are located. The manufacturer will test the solar elements and panels in a special laboratory before they go on sale. Indicators must meet the established standards of characteristics of solar panels. The same indicators will be written on the device passport. And we buy a product based on this characteristic. The problem is that the passport presents the values of the characteristics indicated in accordance with the climatic conditions of the Mediterranean Sea. That is, to fully manifest the characteristics specified in the passport, winter must be mild (10-16 ° C), and summer should be dry and moderately hot (22-30°C). Air humidity should be between 50 and 65% in summer and 65-80% in winter. Solar panels are tested and characteristics are written in close proximity to this climate. More specifically, conditions with 1,000 Wt/m² of radiation, air mass coefficient for the solar spectrum of 1.5 degrees Fahrenheit [-25°C] are standard test conditions (STC). Therefore, the characteristic information provided by the manufacturer differs from the actual value on the ground, which differs from the laboratory conditions. In general, the performance of solar panels depends on five main factors: the annual distribution of solar radiation intensity, changes in panel efficiency, annual temperature distribution, the temperature coefficient of panels, and the rate of degradation over time. The most important factor that directly affects productivity is the ambient temperature. As the air temperature increases, the effectiveness of solar panels decreases. In a sense, the more radiation it gets to the surface of the panel, the more electricity it may seem to generate, but in fact, it is not. Temperature increases lead to an increase in internal resistance in the solar element. Temperatures create an increase in the flow of electrons. This leads to an increase in the power of the load and a decrease in voltage.

There are two solutions to this problem. First, when installing solar panels, it is necessary to take into account air circulation and not stick the panels together as much as possible. In the installation location, it is necessary to select the space that will fit the maximum to the wind lanes. It is necessary to pay attention to the carcass material of the panels. It is necessary to purchase panels made of materials that conduct heat as well as possible and do not allow local heating. The second is the selection of panels made up of climatic solar elements [5,6].

Information about photoelectric systems and their design.

The main components of the photoelectric systems are: solar panel, controllers, aculyator batteries and inverters (Fig. 1).

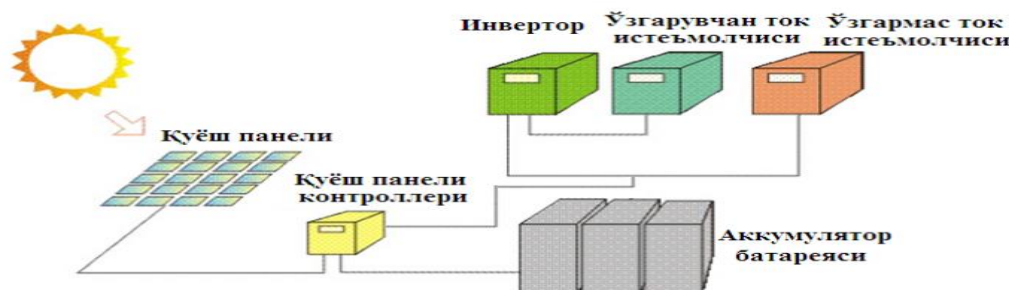


Figure 1. Photoelectric system connection scheme

The ECB is a protective device against deep approval (when energy is used in large quantities) and overcharging (when the ECB produces a fully charged but FEM token).

The design of photoelectric systems (FETH) took into account observations and research conducted in the province of Fargo, taking into account the need for consumers for average daily electricity. They are reflected in Table 1 below.

In March, the use of solar panels was studied in a two-bedroom house located on 9th Street in the province of Fargo, Bogotá. During the study, the composition of the solar panel power plant of the nine-story house consists of the elements shown in Table 1.

No	Nomi	soni
1	250 Vattli quyosh paneli	4
2	12 V kontroller	1
3	12 V 200 A*s akkumulator	2
4	12 Invertor	1

Structure of the solar panel

- 1-mouth frame
- 2-shaffof koplama
- 3-sun-shaped plate
- 4th Heat Exchanger Panel
- 5th Heat Coating
- Corpus 6

The controller device is used to control the battery voltage of the accumulator and protect it from being reduced or oversaw by the nominal value of the charge. Our project presents a simple scheme of controller device and has been tested during research.

Battery equipment As a backup energy source, we use a battery battery. Therefore, to collect the backup energy to the battery battery, a charging device will be necessary. This charging device charges a battery battery, taking energy from a 220 V network. In the event of loss of

power in the network, the fixing device uses battery power. Thus, the information device being fixed has an unstoppable energy supply

Inverter Often, it is required to turn an irreversible token into a variable token. The device that turns an irreversible token into a variable token is called an inverter.

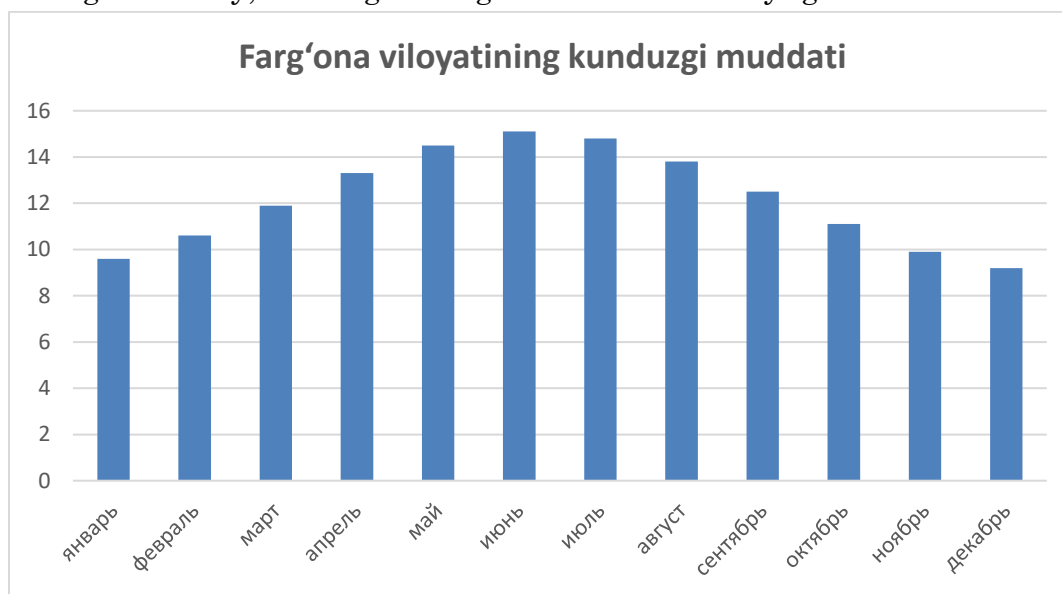
In total, it produces electricity per 1,000 Vt/h. Based on table 2 below, the household identified an extension of electricity.

8953

№	Nomi	Soni	QuvvatiVt*s oat	Umumiy quvvatiVt*s oat	Foydalanish vaqti, soat	O'rtacha kunlik elektr energiya ishlatilishi Vt*soat
1	Svetodiod lampa	10	7	70	4	280
2	№	Name	number	1	250 Watt Solar Panel	4
2	12 V Controller	1	3	12 V 200 A*s akkumulato r	2	4
12	1	1	375	375	6	2250
6	Mikroto'lqinli pech	1	1000	1000	0.2	200
№	Name	Sonny	QuvvatiVt*s oat	Total powerVt*h	Usage time, hour	Average daily electricity use
1	Svetodiod lamp	10	7	70	4	280
2	Telephone	2	9	18	3	54
4	TV set	2	100	200	5	1000
5	Refrigerator	1	375	375	6	2250
6				Microwave		

According to Table 2, the household's daily need for electricity was 8953 Vt*s.

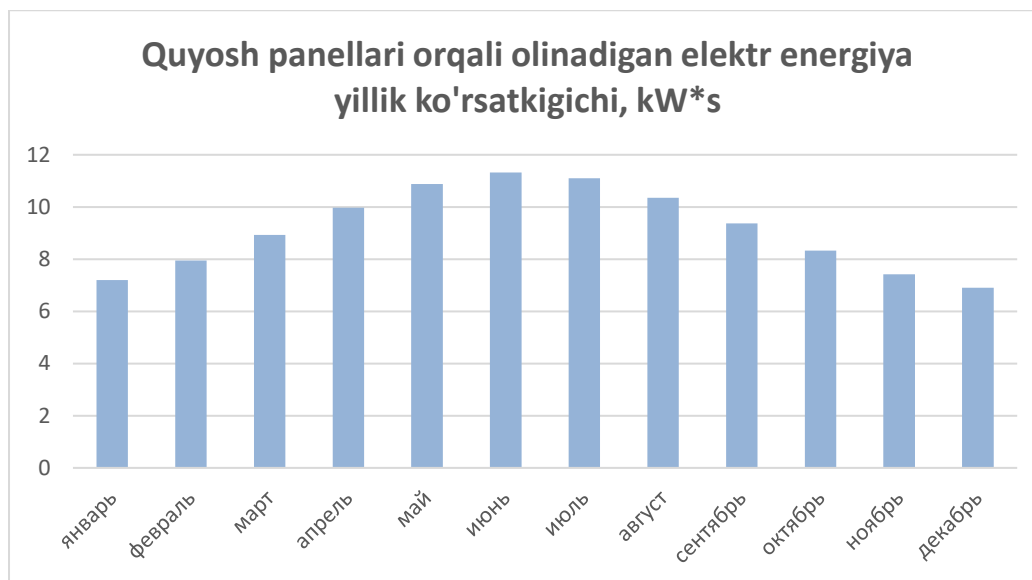
Using solar panels, it was studied to produce electricity in the case of 1,000 vt*s in the province of Fargo. During the study, the fergana region consisted of daylight hours.



1-sonli diagram

According to the studied indicators, the minimum daylight time was December, an average of 9.2 hours. The longest time was June, an average of 15.1 hours.

According to chart 1 of the above, the electricity generated through the solar panel was calculated in Chart 2.



2-sonli diagram.

According to Chart 2, the minimum indicator of electrical energy produced by solar panels was an average of 9,200 W*s in December. The highest pointer averaged 15100 W*s in June.

Calculation of the economic efficiency of the results of the study.

Looking at the consumption of electricity, the household's electricity supply was 8953 Vt*s per day. The lowest indicator of electricity supply during the year was 9200 W*s per day. It was then discovered that at least 247 Vt*s had been lost.

The cost of electricity in the household was studied economically. The establishment of a solar power plant of 1,000 Vt*s was found to be an average of about 10,000,000 gallons [10,000,000 L] at the current market price and to work with a guarantee for 10 years[7]. Now the cost of electricity supplied by the state electrical grid is 295 soums per 1 kW*s [8]. Economic analysis calculated the value of electricity supplied by the state-owned electrical grid at a cost of 10 years. At that time, the household's daily need for electricity was an average of 8,953 Vt*s, or 9 kVt*s. Taking into account the number of 10 years and 3,650 days, it gave the value of 32,850 kVt*s when the total 3,650 days were increased to 9 kW*s. The state price of electricity for 32850 kW*s has increased by 295. The total value was 9,690,750 gallons [9,690,750 L] of water for 10 years. Additionally, the minimum indicator of electricity supply over the course of the year was 8953 Vt*s per day. At least 247 Vt*s were then found to have exceeded 265,957 gallons [265,957 L].

SUMMARY

According to the above indicators, energy can be used through solar panels for 25 years 10 years when used, costs will be covered, resulting in the remaining 15 years of net profit

remaining through solar panels. Cheap and quality electricity will be available in households, remote areas and other poor power supply areas when using solar energy.

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